ABSTRACT

A Factorized Power Architecture ("FPA") method and apparatus includes a front end power regulator ("PRM) which provides one or more controlled DC bus voltages which are distributed through the system and converted to the desired load voltages using one or more DC voltage transformation modules ("VTMs") at the point of load. VTMs convert the DC bus voltage to the DC voltage required by the load using a fixed transformation ratio $K=V_{out}/V_{in}$ and with a low output resistance. VTMs exhibit high power density, efficiency and, owing to their inherent simplicity and component utilization, reliability. VTMs may be paralleled and share power without dedicated protocol and control interfaces, supporting scalability and fault tolerance. Feedback may be provided from a feedback controller at the point of load to the front end or to upstream, on-board power regulator modules ("PRMs") to achieve precise regulation.

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